ACCESSION #: 9611140029

LICENSEE EVENT REPORT (LER)

FACILITY NAME: Peach Bottom Unit 2 PAGE: 1 OF 3

DOCKET NUMBER: 05000277

TITLE: Two automatic reactor shutdown as a result of a main

generator trip due to an actuation of the negative

sequence current protective relay

EVENT DATE: 10/06/96 LER #: 96-010-00 REPORT DATE: 11/05/96

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 088

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:

50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:

NAME: George Lengyel TELEPHONE: (717) 456-7014

COMPONENT FAILURE DESCRIPTION:

CAUSE: SYSTEM: COMPONENT: MANUFACTURER:

REPORTABLE NPRDS:

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

This LER is being submitted to report two automatic reactor shutdowns which occurred on 10/6/96 and 10/15/96 as a result of a main generator trip and lockout due to the actuation of the negative sequence current protective relay. No evidence of an actual main generator negative sequence current event was identified. During testing of the negative sequence relay instrumentation circuitry, all electrical connections were checked. Loose connections on the current transformer were identified and corrected which were believed to have caused the relay to actuate. No other potential causes were

identified. Subsequently, on 10/15/96, Unit 2 automatically shutdown again as a result of a main generator trip and lockout due to the actuation of the negative sequence current protective relay. The negative sequence relay was replaced with a newer design, the trip function was defeated based on an engineering analysis, and additional monitoring equipment was installed. Unit 2 was subsequently returned to service on 10/18/96 with no anomalies identified per the monitoring program. The investigation into the cause of the actuation of the negative sequence relay is continuing. The negative sequence relay has been sent to General Electric Co. for a detailed analysis. No actual safety consequences occurred as a result of these events. All plant systems responded as designed during both events. No previous similar LERs were identified

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Requirements of the Report

This report is submitted pursuant to 10 CFR 50.73(a)(2)(iv) due to

unplanned Engineered Safety System actuations.

Unit Conditions at Time of Events

On 10/6/96, Unit 2 was in Mode 1 (RUN) operating at approximately 88

percent reactor power.

On 10/15/96, Unit 2 was in Mode 1 operating at approximately 98 percent

reactor power.

There were no other systems, structures, or components that were

inoperable that contributed to the event.

Description of the Events

This LER is being submitted to report two automatic reactor shutdowns

which occurred on 10/6/96 and 10/15/96 as a result of a main generator

trip and lockout due to the actuation of the negative sequence current

protective relay. Following the first event, an investigation was

performed that determined no actual negative sequence current condition

had occurred. The investigation evaluated other potential causes such as generator design parameters and instrumentation. The negative sequence relay was removed and tested with no abnormalities identified. During testing of the negative sequence relay instrumentation circuitry, all electrical connections were checked. Loose connections on the current transformer were identified and corrected which were believed to have caused the relay to actuate. No other potential causes were identified. Additionally, temporary monitoring equipment was installed on the negative sequence relay circuitry and continuously monitored during power ascension. No abnormalities were detected or identified.

Subsequently, on 10/15/96, Unit 2 automatically shutdown again as a result of a main generator trip and lockout due to the actuation of the negative sequence current protective relay. A review of the previous testing plan and techniques was performed. Previous and additional tests were conducted with no anomalies identified. The negative sequence relay was replaced with a newer design, the trip function was defeated based on an engineering analysis, and additional monitoring equipment was installed. Unit 2 was subsequently returned to service on 10/18/96 with no anomalies identified per the monitoring program.

Cause of the Events

The investigation into the cause of the actuation of the negative sequence relay is continuing. The negative sequence relay has been sent

to General Electric Co. for a detailed analysis.

Analysis of the Events

No actual safety consequences occurred as a result of these events. All plant systems responded as designed during both events. No evidence of an actual main generator negative sequence current event was identified. The negative sequence relay provides primary protection for minor imbalances on the system and backup protection for a major fault. The negative sequence relay is not an Engineered Safety Feature.

Corrective Actions

The negative sequence relay was replaced with a newer design and Unit 2 has been returned to service without further incident.

The trip function of this relay, which normally actuates at nine percent negative sequence current, has been disabled. The five percent negative sequence current alarm has been maintained. Procedural guidance has been established to remove the generator from service if a true abnormal negative sequence condition exists. This procedural guidance is based on other available indications of excessive negative sequence current such as increases in generator rotor heating, core monitoring anomalies and/or bearing vibration. Other generator protective relaying remains available to trip the generator in the event of a major electrical fault.

The investigation into the cause of the actuation of the negative sequence relay is continuing. The relay has been sent to General Electric Co. for a detailed analysis. Significant results of this

investigation will be reported in a revision to the LER as appropriate.

Previous Similar Events

No previous LERs were identified in which an automatic reactor shutdown occurred as a result of a main generator trip and lockout due to negative sequence protective relay actuation.

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